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WILD COMMERCIAL FISHERY OF ARKANSAS

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ABSTRACT

Arkansas' wild commercial fishery industry was surveyed to evaluate commercial fish products produced within the state. The total wild commercial catch for the period of 1 July 1980 to 30 June 1981 was approximately 8,680,124 kg with a value of \$6,245,967. These values represent an increase of approximately 3% from the previous year. The bulk of the commercial harvest was made up of buffalo fishes (*Ictalobus* spp.), catfishes (*Ictalurus* spp.), gars (*Lepisosteus* spp.) and carp (*Cyprinus carpio*).

The number of commercial fishermen remained relatively unchanged from 1979-1980, with 3,843 licensed fishermen operating on the state's waterways. The number of licensed hoop nets and long lines (trot or throw lines) increased slightly, while the number of licensed long nets (gill and trammel nets) in use increased 29%.

INTRODUCTION

For many years, commercial fishing in both reservoirs and rivers has been used both as a fishery management tool (Grinstead, 1975; Seidensticker, 1977) and as a means to utilize fishes otherwise seldomly used (Heard, 1959; Parrock and Mensinger, 1968; Higham, 1974). Traditionally, commercial fishermen have employed methods such as gill netting, hoop netting and hook and line to harvest fishes such as buffalo (*Ictalobus* spp.), catfishes (*Ictalurus* spp.) and *Pylodictis olivaris*, gars (*Lepisosteus* spp.), carp (*Cyprinus carpio*), drum (*Aplodinotus grunniens*), sturgeons (*Scaphirhynchus* spp.) and paddlefish (*Polyodon spathula*).

Regulated by the Arkansas Game and Fish Commission via seasons, tackle restrictions and licenses, a wild commercial fishery exists in Arkansas. Based primarily on the larger, lowland waterways of the Arkansas, Red, White and Mississippi river systems, this fishery has evolved into a several million dollar per year industry (Henderson et al., 1980; Crawford and Freeze, 1982).

As part of an ongoing study to monitor the commercial fishery industry of Arkansas, this survey was conducted to determine harvest, trends and monetary value of the wild commercial fishery of Arkansas. The study was partially funded by Public Law 88-309 through the National Marine Fisheries Service.

MATERIALS AND METHODS

Commercial fishermen operating on the four major river systems in the state were divided into two classifications. Based upon the licensed pieces of tackle owned, fishermen were grouped as casual fishermen (those who sell little of their catch) or regular fishermen (those who make their living fishing). On occasion, commercial fishermen were accompanied by district fishery personnel. Observations recorded included: types of gear fished, time periods each piece of gear was used, and the number and weight of each fish species taken. Commercial gear was also fished by fishery biologists in their respective districts. Commercial fishing gear used included hoop nets (baited or unbaited) with a mesh equal to or greater than 5.3 cm, long nets (gill and trammel nets) of various lengths with a mesh equal to or greater than 7.6 cm and long lines (trot lines and snag lines) of various lengths with drops no closer than 0.6 m. Information obtained from these gear types were used to calculate catch per unit of effort values.

Average wholesale prices and the mean number of days fishermen operated in each river system were obtained by personal interviews with commercial buyers and fishermen. Estimations of mussel shell harvest were obtained from telephone interviews with shell buyers. Data were

then correlated with a computer listing of commercial fishing license sales to determine total catch estimates and the value of the statewide industry. Comparisons made to 1979-1980 data utilized data compiled by Freeze and Fiegel (1981).

RESULTS AND DISCUSSION

When examined on a statewide basis, the number of both casual and regular fishermen (Table 1) remained relatively unchanged from the previous year. However, within the various river systems the number of individuals operating (Table 1) varied somewhat from 1979-80. The number of casual fishermen were slightly lower (-4%) in the White River system, while slight increases were noted for casual fishermen in the Mississippi (+1%) and Red River (+4%) systems. A somewhat more substantial increase (+10%) was noted for casual fishermen in the Arkansas River system. The number of regular commercial fishermen declined three, seven and 13 percent in the Mississippi, Arkansas and White river systems, respectively. The only increase in regular fishermen occurred in the Red River system (+23%).

Table 1. Number of licensed commercial fishermen and gear by river systems (July, 1980 - June, 1981).

River System	Number of Regular Fishermen	Number of Casual Fishermen	Number of Licensed Long Nets	Number of Licensed Hoop Nets	Number of Licensed Long Lines
Arkansas	116	880	1,648	1,752	1,680
Red	87	1,076	1,981	1,660	606
White	96	1,080	1,568	3,109	1,467
Mississippi	73	430	868	1,053	981
Statewide Totals	372	3,466	6,065	7,619	4,834

The numbers of licensed commercial fishing gear (Table 1) increased during 1980-81. The total number of hoop nets and long lines in use increased slightly, while the number of long nets in use increased approximately 29%. Shifts in the types of gear in use among regular

Wild Commercial Fishery of Arkansas

fishermen were noted in the Mississippi, Red and White river systems. The number of licensed hoop nets in use in these systems decreased, while the number of long nets in use increased 14%, 39% and 59%, respectively.

Catch per unit effort totals (Table 2) were greatest in the White River system for all types of gear. In all river systems, long nets exhibited the best catch per unit effort. With the exception of the Red River system, catch per unit effort totals in all systems were two to five times greater than those recorded in 1979-80.

Table 2. Arkansas catch per unit effort values (kg) by river systems and gear types for 1 July 1980 to 30 June 1981*.

Species	Arkansas River System			White River System		
	Hoop Nets	Long Nets	Longlines	Hoop Nets	Long Nets	Longlines
Catfish	2.57	22.29	7.39	0.39	18.30	18.48
Buffalo	0.08	13.86	.29	10.80	60.28	---
Carp	0.07	3.41	---	0.22	18.24	---
Drum	0.44	2.87	---	0.01	1.32	---
Gar	---	1.17	---	---	14.18	30.38
White Amur	---	1.31	---	---	---	---
Paddlefish	---	0.31	---	0.23	---	---
Bowfin	---	---	---	---	---	1.78
Carp sucker	0.09	0.19	---	0.02	---	---
Sturgeon	---	0.11	---	---	---	---
Turtles	---	---	---	0.13	---	---
Totals	4.04	49.79	7.68	12.86	115.19	50.6

Species	Mississippi River System			Red River System		
	Hoop Nets	Long Nets	Longlines	Hoop Nets	Long Nets	Longlines
Catfish	6.88	11.88	8.82	3.12	5.12	8.48
Buffalo	7.68	48.73	1.12	2.29	7.68	---
Carp	---	24.08	---	2.11	1.88	---
Drum	---	4.80	0.31	2.29	0.42	---
Gar	---	14.43	---	0.11	14.92	---
White Amur	---	---	---	0.28	0.94	---
Paddlefish	---	0.11	---	0.19	0.13	---
Bowfin	---	0.70	---	---	0.28	---
Carp sucker	---	0.35	---	0.31	---	---
Sturgeon	---	0.73	---	---	---	---
Turtles	---	0.44	---	---	---	---
Totals	9.32	106.26	11.26	10.70	31.30	8.49

*Slight piece of gear fished for one night.

Wholesale prices paid to commercial fishermen (Table 3) were for the most part unchanged from the previous year. Exceptions were slight increases in the price of catfishes (+4.7%) and buffalo (+3.3%) and a slight decrease in gar prices (-4.7%).

Table 3. Average Wholesale fish prices in Arkansas from July, 1980 through June, 1981 (price/kg).

Species	Arkansas River System	White River System	Red River System	Mississippi River System
Catfish	1.32	1.58	1.54	1.32
Buffalo	.66	.68	.73	.66
Carp	.22	.22	.33	.22
Drum	.66	.44	.77	.66
Gar	.33	.33	.44	.26
White Amur	.66	.55	.66	.51
Paddlefish	.33	.55	.66	.55
Bowfin	.11	.11	.11	.11
Carp sucker	.33	.22	.66	.11
Sturgeon	.66	.66	.66	.66
Turtles	.55	.59	.55	.59
Mussel Shells	Statewide Average = \$390/metric ton			

The total harvest of fish (Table 4) increased slightly from 1979-80. Harvest from the Arkansas and Red river (Table 4) systems were down markedly (approximately 45%) even though an increase in the numbers of fishermen was noted in the Red River system. These decreases were overshadowed by increases of 45% from the White River system (Table 4) and a twofold increase in the Mississippi River system (Table 4). The decrease noted in the Arkansas River system was probably due to the reduction in both the number of regular fishermen and pieces of gear fished by them. The reduction in catch from the Red River system can only be explained by extremely low catch per unit effort values (Table 2). Increases noted in the two remaining systems in all likelihood resulted from a shift in the use of hoop nets to the use of long nets and long lines. This resulted in a much larger observed catch of catfish than in previous years.

Table 4. Statewide commercial fish harvest by river systems (July, 1980 - June, 1981).

Species	Arkansas River System		Red River System		White River System		Mississippi River System		Statewide Harvest	
	kg	Value	kg	Value	kg	Value	kg	Value	kg	Value
Catfish	2,476,488	\$ 452,016	847,476	\$ 317,438	2,610,227	\$ 884,288	2,637,618	\$ 779,169	8,571,809	\$2,392,911
Buffalo	1,969,130	\$88,527	1,280,084	\$99,028	6,133,243	\$1,318,226	4,587,777	\$81,808	17,470,234	\$2,314,139
Carp	803,200	\$7,890	244,612	\$8,262	1,474,750	\$7,234	2,418,274	\$88,326	4,740,836	\$22,493
Drum	437,688	\$8,392	228,023	\$8,071	229,281	\$6,053	471,629	\$4,113	1,466,671	\$48,870
Carp sucker	120,475	\$4,808	24,132	\$2,871	11,185	\$2,341	93,707	\$1,178	258,605	\$5,729
White Amur	78,222	\$2,328	102,443	\$2,543	---	---	---	---	283,168	\$3,478
Gar	441,242	\$6,396	1,281,866	\$13,208	4,084,740	\$76,493	1,284,213	\$6,818	7,094,661	\$68,278
Sturgeon	19,084	\$708	---	---	17,094	\$271	89,633	\$302	126,811	\$4,380
Paddlefish	20,053	\$739	20,963	\$485	181,208	\$2,949	715,172	\$1,433	941,496	\$1,130
Bowfin	---	---	22,740	\$84	142,634	\$3,423	67,471	\$1,336	242,985	\$5,323
Turtles	---	---	---	---	30,054	\$300	42,231	\$499	73,075	\$837
Mussels	---	---	---	---	48,207	\$482	428,446	\$2,358	684,482	\$6,455
Totals	6,474,888	\$1,222,022	4,284,282	\$175,498	16,288,258	\$2,580,224	12,488,654	\$1,779,139	40,466,022	\$9,495,967

The monetary value of the statewide harvest (Table 4) was approximately 3.7% higher than that of 1979-80. As could be expected, due to decreased harvest, the value of the fisheries in the Arkansas and Red river systems (Table 4) was down considerably while large increases were noted in the value of the White and Mississippi river systems' fisheries (Table 4).

As in previous years, buffalo fishes were the principle species harvested (Henderson and Freeze, 1979; Henderson et al., 1980; and Freeze and Fiegel, 1981), comprising 43% of the harvest. This was followed by catfishes (22.8%), gars (17.9%), carp (11.8%) and drum (3.7%). With the exception of carp, these fishes generally represented the higher priced, more intensively sought after species.

Marked increases in catches of catfishes and gars probably resulted from an increase in the use of long nets as opposed to hoop nets. The increased mussel harvest (ten-fold increase) was in all likelihood due to the low river levels experienced in the summer and fall of 1981, making mussels more accessible to fishermen.

The harvest of white amur (*Ctenopharyngodon idella*), which only represented 0.55% of the total catch by weight, was noteworthy since this species has received increased attention recently. The harvest of 224,965 kg of white amur represented a five-fold increase over the preceding year.

As a ready market for paddlefish roe is available in nearby states (Carlson and Bonislawsky, 1981), the relatively small catch of paddlefish is partially due to the absence of known spawning grounds in Arkansas.

Due to increasing red meat prices, the per capita consumption of fish products by the public has increased significantly in the past and is expected to continue to do so in the near future (USDA, 1981). This, coupled with a severe drought related decline in Arkansas' aquacultural products and good reproduction of commercial fish species in the Arkansas River (Crawford and Freeze, 1982), indicates stable and favorable industry conditions for the future.

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